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12 September 2012

Climate Change Authority
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Dear Climate Change Authority members,

RE: Renewable Energy Target Review – Issues Paper

Thank you for the opportunity to provide comments to the review of the Australian Renewable Energy Target. Please find attached a response to the questions and other issues raised in the Renewable Energy Target Review Issues Paper.

We are seven residents of Brisbane – an electrical power engineer and an employee of a company that builds, owns and operates both fossil-fuelled and renewable power plants in Australia; a university student; a former mining and energy research coordinator for the building and construction industry; a convenor of a sustainability group involving households, workplaces and policy; a trainer of multidisciplinary sustainability professionals; a project ecologist for the mining industry; and an environmental chemist and researcher into water quality impacts associated with hydraulic fracturing in coal seams.

If you would like further information or should you have any queries, please do not hesitate to contact us as per the details provided below.

Yours sincerely,

[redacted] on behalf of

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Large-scale Renewable Energy Target

1. Are the existing 41,000 GWh LRET 2020 target and the interim annual targets appropriate? What are the implications of changing the target in terms of economic efficiency, environmental effectiveness and equity?

The Commonwealth commitment is to "at least 20% of Australia's electricity from renewable sources by 2020"[1]. The existing 41,000 GWh LRET 2020 target and the interim annual targets seem inadequate given this goal.

According to *Energy in Australia 2012* (Australian Government Bureau of Resources and Energy Economics), 242 TWh of electricity was generated in Australia in 2009-10. Of this, renewables accounted for 8% (19,711 GWh). The RET Review Issues Paper ("Issues Paper") confirms this figure, stating on page 9 that renewable sources provided 19,711 GWh of electricity generation in 2009-10.

Given that the interim annual target appears to be approximately 17,000 GWh for 2012 as shown in Figure 5.2 of the Issues Paper (from the 12,500 GWh target in the REE Act, s 40, adjusted according to the number of valid certificates as at the end of 2010), and given that in 2009-10, renewable energy already provided 19,711 GWh, the target appears too low to have any effect at this stage. Indeed even if there were no additional renewable generation installed since 2009-10, it won't be until 2016 that the interim annual target is larger than the 2009-10 generation figure.

From the above analysis it appears that the RET scheme has and will be totally ineffective until at least 2016, at which point Australia will still be producing only 8% of our electricity from renewable sources assuming total demand is constant at 242 TWh as in 2009-10 (and if electricity demand was to increase then renewables would be providing less than 8%). This will leave 4 years from 2016 to 2020 for the construction of enough renewable generation infrastructure to meet 12% of our electricity needs (the difference between the existing 8% and the 20% target).

As a theoretical example, assuming no increase in demand from 2009-10, this would imply that the renewable energy target should be 20% of 242 TWh/yr, (48,400 GWh/yr), of which 19,700 GWh would be generated by existing renewables so the balance of 28,700 GWh would be required. If this were to all be provided by wind power (currently the cheapest form of renewable energy), with for example an average capacity factor of 35%, then 9.36 GW of wind generation would need to be constructed in those 4 years. Given that there is currently only 2.18 GW of wind power installed in Australia (Table 15, page 52 of *Energy in Australia 2012*, Australian Government Bureau of Resources and Energy Economics), this would require the construction of more than four times the total current installed wind capacity over a 4-year period starting in 2016.

Considering the slow rate of construction of wind projects to date and the continuing lack of interest from retailers in signing offtake agreements at a level that would make renewable projects viable, the commitment to at least 20% renewables by 2020 will be unachievable under the existing RET scheme and LRET target.

These may be conservative estimates given the AEMO annual energy forecast in Figure 5.4 of the Issues Paper shows annual energy use projected to increase by approximately 10% from

[1] Explanatory Memorandum, *Renewable Energy (Electricity) Bill 2010*.

2009-10 levels by 2020 rather than remaining constant, which would imply that to reach 20% of generation from renewables then the RET should be higher still.

Economic Efficiency

The LRET is an economically efficient method of supporting renewable electricity projects. However, uncertainty about the future level of the RET has led to a lack of investment in renewables. Developers of renewable projects currently face difficulty in achieving financing as well as higher funding costs for projects due to this uncertainty (political risk), as offtakers (primarily the electricity retailers) seek to pass on RET review risks to the project owners. In addition, offtakers are delaying signing offtake agreements and developers are delaying construction of power projects due to the uncertainty about electricity policy in the future.

Developers of all power projects, including fossil-fuelled projects, face the same risks and additional costs due to the uncertainty in future electricity policy. Any continuing uncertainty will lead to continued economic inefficiency (ie higher electricity pool prices) as a result of:

- Higher project funding costs and hence higher electricity prices to recoup the higher cost of funding;
- The lack of construction of renewable energy due to the current lack of offtake agreements is likely to lead to a huge rush for project construction in the few years before 2020. This will place a huge demand on skilled construction professionals, construction crews and construction equipment such as specialist cranes, specialist trailers for transport, and civil and electrical equipment such as trenching machines, high voltage transformers and switchgear. It may also place a high demand on equipment manufacturers, for example wind turbine, solar PV and solar thermal suppliers. This high demand is likely to increase the cost of project equipment and construction, which will also lead to an increased cost of electricity for consumers down the track compared to having a stable ramp-up of construction of renewable projects.
- Continued uncertainty in the RET may lead to the construction of new fossil-fuelled power plants to replace delayed renewable generation, such as new coal-fired or gas-fired plants, that may be required to shut down before the end of their design life. Costs of construction of all generation are passed on to consumers so such investment and premature closure of power plants would lead to a higher cost of electricity in the long term.

Given that any new electricity generation infrastructure will have a lifespan of at least 25 years, it would be most economically efficient for any legislation or target to reflect the likely status of electricity generation in the future so as to send a clear signal to the Australian electricity market about what sorts of projects will be economically efficient in the long term. Due to the increasing urgency for action on climate change (and the associated increasing cost of fossil-fuelled generation), combined with the decreasing cost of renewable generation technologies, it would be expected that the proportion of electricity generated by renewables will continue to increase over time. It would be most economically efficient to increase the target to 100% renewables over a certain time period, or even require that all new generation infrastructure be 100% renewable generation, considering that this outcome is a given at some point in the future based on climate change science.

For any new projects, developers of power plants will invest in whichever generating technology is expected to give the best financial return over its lifetime. Companies should be encouraged to invest in generation technologies that will continue to be encouraged and viable to the end of their operating life. If there is not a policy towards increasing renewables, further economic inefficiency (higher electricity pool prices) would be the likely result as companies may invest in generation technology that may later be penalised or required to shut down, potentially requiring Government compensation, before the end of their operating lifetimes.

Chapter 11 of the *Garnaut Climate Change Review* (commissioned by the Australian Government, delivered in May 2011), on costing climate change and its avoidance, examines the mitigation costs to Gross National Product through the 21st century and concludes that stronger mitigation is justified by benefits in insurance value and non-market values in the 21st century and much large benefits beyond, and that "the costs of action are less than the costs of inaction". A 100% renewable energy target is one form of action to which this statement applies.

It would appear to be most economically beneficial to increase the Renewable Energy Target to 100% over a certain timeframe, with the ability to bring forward the target if more generation is constructed than expected at the time of making the target, and without the ability to reduce the target. It may even be prudent to require all new generation infrastructure to be renewable generation until the target is reached. This would create a stable investment environment and lead to a more economically efficient rollout of power generation projects over time.

As a result of rapid growth in energy use by China, India and Japan, Australia's coal and gas reserves are increasingly in demand and the Australian energy sector has responded by ramping up exports. This has already resulted in a substantial increase in the domestic price of these commodities and domestic gas prices are likely to rise further as they move toward parity with international markets. Reliance on these commodities for Australia's energy supply is becoming an increasingly high-risk energy policy. Domestic buyers of gas already face difficulty arranging supply contracts despite abundant capacity because resources are being allocated to offshore markets. A strong RET scheme would provide the foundation for transforming our energy supply and ensuring these risks are mitigated.

Port Jackson Partners' presentation, *The Outlook for Retail Electricity Prices*, 27 September 2011, provides estimates of gas fired generation costs for Queensland up to 2020. They show that the current market expectation of the Long Run Marginal Cost of gas generation is higher than the price of offtake agreements that would make wind power projects feasible. Considering the 25-year plus lifetime of any new generation project, the obvious conclusion is that even today it is more economically efficient to construct a new wind farm than to construct a new gas-fired plant, however due to the short-term focus of electricity offtakers, this is not yet reflected in the projects being constructed.

Environmental Effectiveness

As per the discussion at the start of this response, the existing 41,000 GWh LRET 2020 target and the interim annual targets will be completely ineffective in achieving the RET's original environmental goals given the lack of incentive to move towards renewable generation due to:

- The ineffectiveness of the interim annual targets;
- The current oversupply of LGCs that do not represent real generation but which are suppressing new investment in renewables; and
- The expected impossibility of the huge construction effort that would be required in the final years of the RET scheme in order to meet the target with real generation.

To be environmentally effective the target should be changed such that all STCs are backed up by real generation, and such that there is an increasing amount of renewable generation required to be constructed in each year in order to reach the 20% target by 2020.

For the RET to be environmentally effective in terms of limiting the effect on Australia from dangerous climate change, then the target should be 100% renewables by 2020.

Australia's per capita carbon emissions are the highest in the OECD and among the highest in the world. The *Garnaut Climate Change Review*, 2008, points out that relative to other OECD countries, Australia's high emissions are mainly the result of the high emissions intensity of

energy use, and the high emissions intensity of energy use is mainly the result of our reliance on coal for electricity. Australia's per capita electricity consumption is about 22 per cent above the OECD average, while our per capita emissions due to electricity generation are more than three times the OECD average (see Figure 1 and Figure 2). The difference is due to the high emissions intensity of electricity generated in Australia.

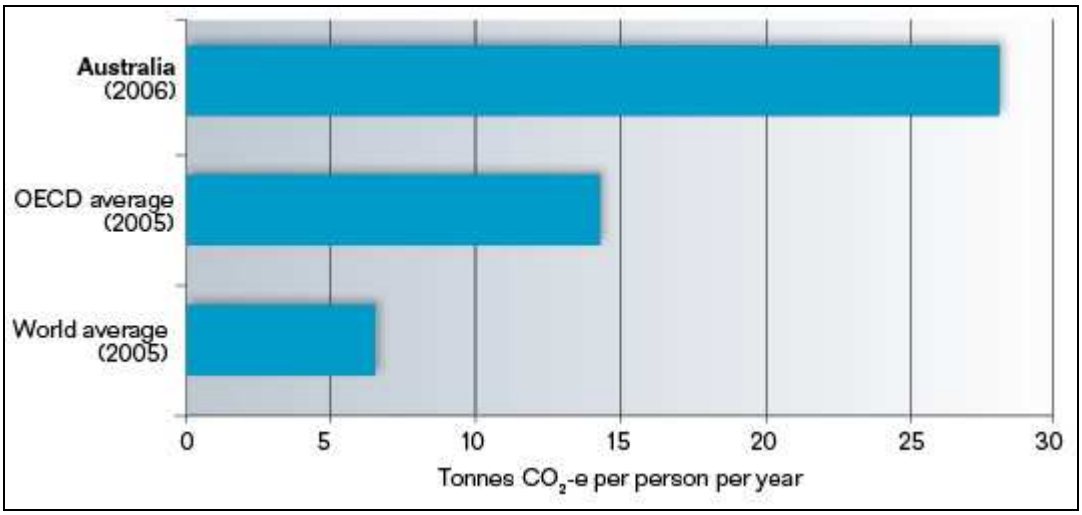

Figure 1: Per capita greenhouse gas emissions (Garnaut Climate Change Review, 2008)

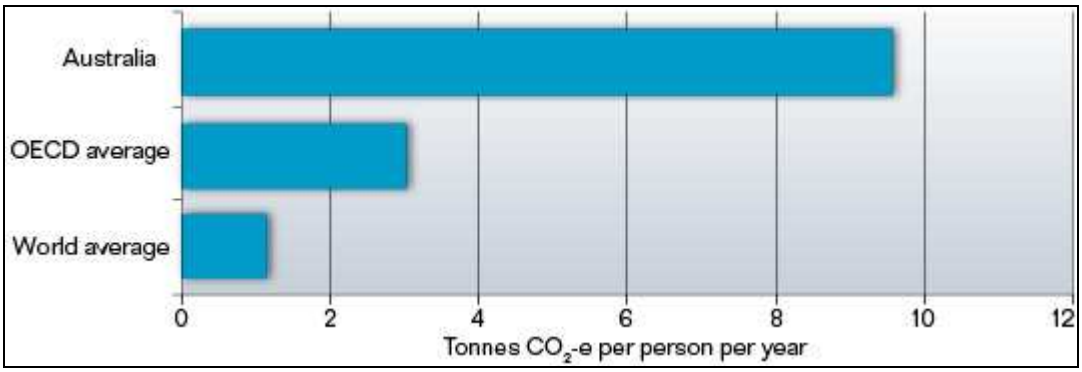

Figure 2: Per capita emissions due to electricity, 2005 (Garnaut Climate Change Review, 2008)

As more renewable capacity penetrates the grid, the emissions intensity of electricity production delivered via the grid falls because the new zero emissions renewable capacity, which has very low marginal cost, displaces emissions-producing coal, gas or distillate-fired thermal capacity. Figure 19, below, from the Clean Energy Council's *Wind farm investment, employment and carbon abatement in Australia Report* from June 2012 shows that every MWh of generation from wind farms in the National Electricity Market directly reduces carbon emissions, by a factor that varies depending on the generation technology that is displaced in each state. Any renewable generation due to the RET scheme would thus clearly be effective in reducing Australia's carbon emissions.

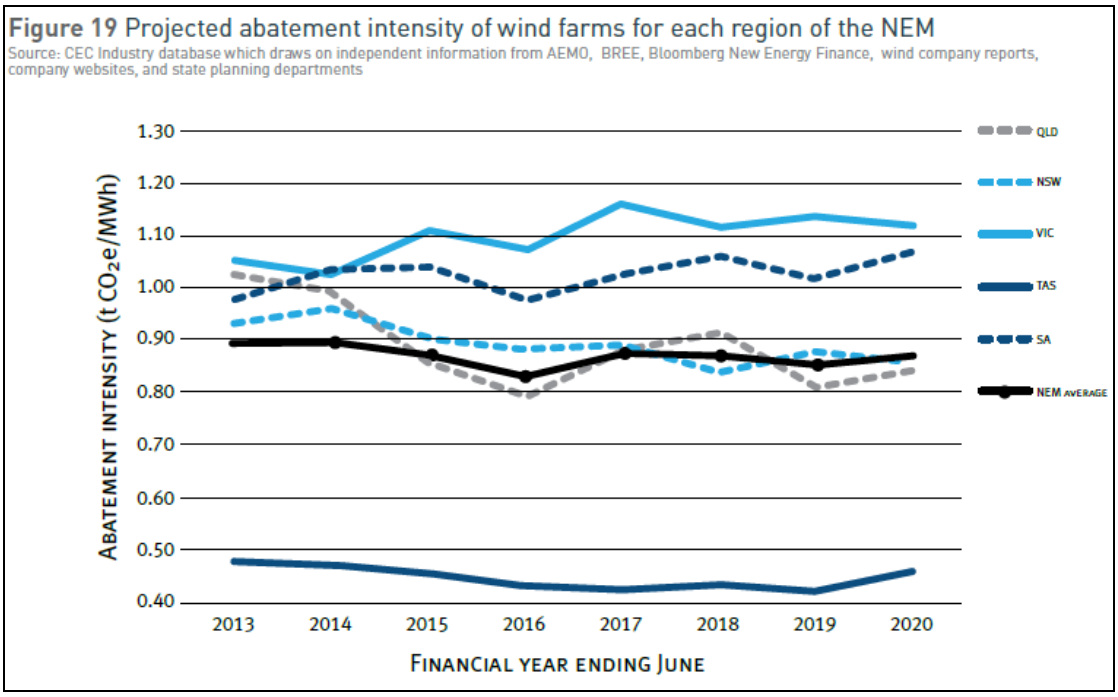

Figure 19: Abatement intensity of wind farms in the NEM (Clean Energy Council, 2012)

From a global perspective the Australian target of 41,000 GWh/yr of renewable generation is small enough to be almost insignificant and a stronger LRET scheme would seem to be the most effective policy to reduce Australia's carbon emissions given that Australia's high emissions are primarily due to the high emissions intensity of electricity generation. Australia's policies should, as a minimum, be aligned with what other countries are doing to reduce carbon emissions.

As mentioned in the Issues Paper, there are legislated or planned renewable energy or renewable electricity targets in over 85 countries, more than half of which are in developing countries. A significant number of countries have higher targets than Australia, including Canada, the USA, all 27 countries in the European Union (Norway, Sweden, Latvia, Finland, Austria, Portugal, Denmark, Estonia, Slovenia, Romania, France, Lithuania, Spain, Croatia, Germany, Greece, Italy, Bulgaria, Ireland, Poland, the United Kingdom, the Netherlands, Slovakia, Belgium, the Czech Republic, Cyprus, Hungary, Luxembourg and Malta), Russia, Morocco, Saudia Arabia, India, China, Japan, Mexico and New Zealand. Further details are provided in response to Q3.

The G8 (France, Germany, Italy, Japan, the United Kingdom, the United States, Canada and Russia), comprising 51% of 2011 global nominal GDP and 42.5% of global GDP, agreed in July 2009 an objective to limit temperature change to 2°C. (*International Negotiations*, UK Committee on Climate Change, 2012).

The main conclusion of the Australian Government's Climate Commission Report, *The Critical Decade*, published in May 2011, was that a temperature increase of 2 degrees is the upper limit or "guard rail" for global warming, beyond which our climate will become dangerously unstable. To have even a 75% chance of staying below this threshold, global emissions from 2010 onwards must be limited to 1 trillion tonnes.

Figure 3, below, sourced from the Potsdam Institute, shows the rate of emissions reductions required from selected countries in order to avoid exceeding the 2 degree guardrail. It allows an equitable rate of global reductions and takes into account the current, per-capita emissions levels of different countries. The work shows that if every country had the same carbon budget per person from 2010, countries like the USA would have to reduce more quickly due

to their high current emissions. As Australia has higher per capita emissions than the USA, Australia would reasonably have until 2020 to fully transition to renewable energy in order to have a 75% chance of avoiding a dangerously unstable climate assuming an equitable rate of global emission reductions.

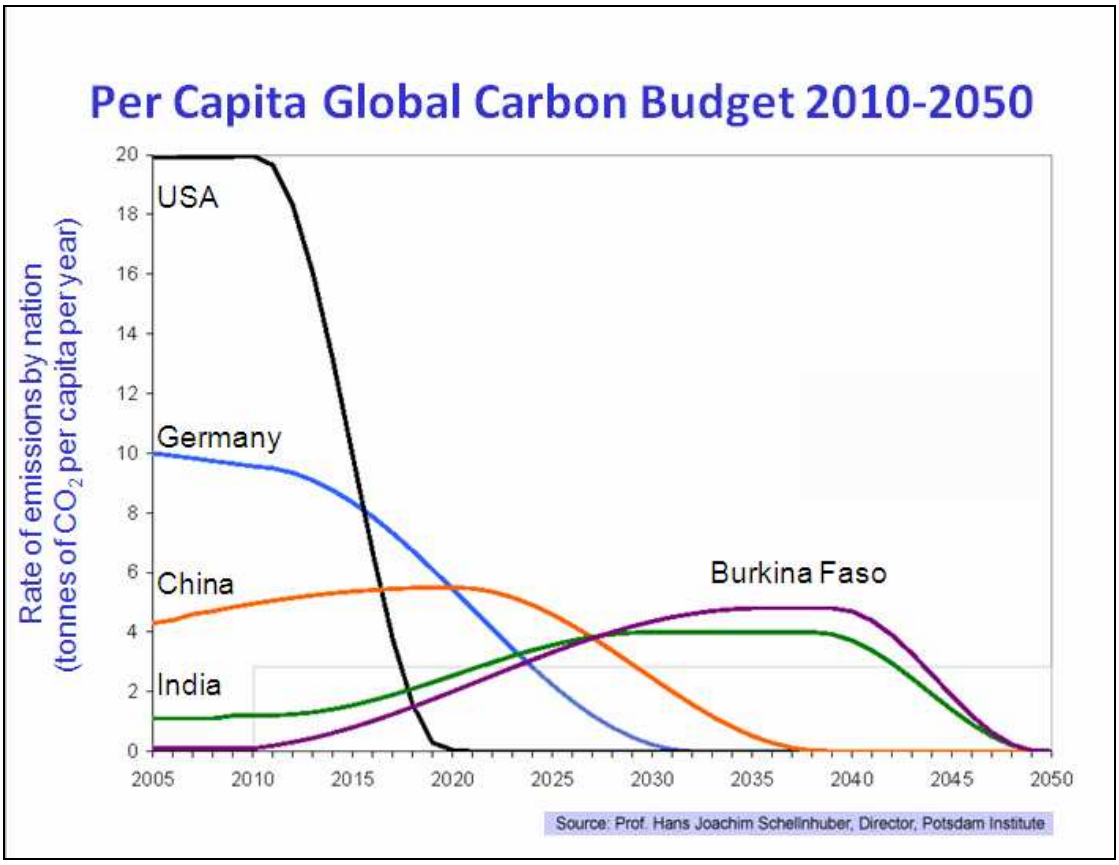

Figure 3: Equitable rate of emissions reduction based on per capita population, from the Potsdam Institute

It would be most environmentally effective to increase the RET to a 100% renewable energy target by 2020.

Equity

The relatively small short-term incremental cost to current electricity users from constructing renewable projects rather than fossil-fuelled generation projects would seem insignificant when examined on a timeframe of decades. This is backed up by the findings of the *Zero Carbon Australia Stationary Energy Plan* (The University of Melbourne Energy Research Institute and Beyond Zero Emissions, June 2010), that a 10-year transition to 100% renewable energy would cost in the order of 3% of the 2009 annual GDP and would have net present cost of one third that of business-as-usual ($806B compared to $2354B for the period 2011-2040), as shown in Figure 7.1, below. The *Stationary Energy Plan* found that a 100% renewables scenario would be cheaper than business-as-usual even if the cost of purchasing coal and gas fuels and emissions permits were excluded from the economic modelling.

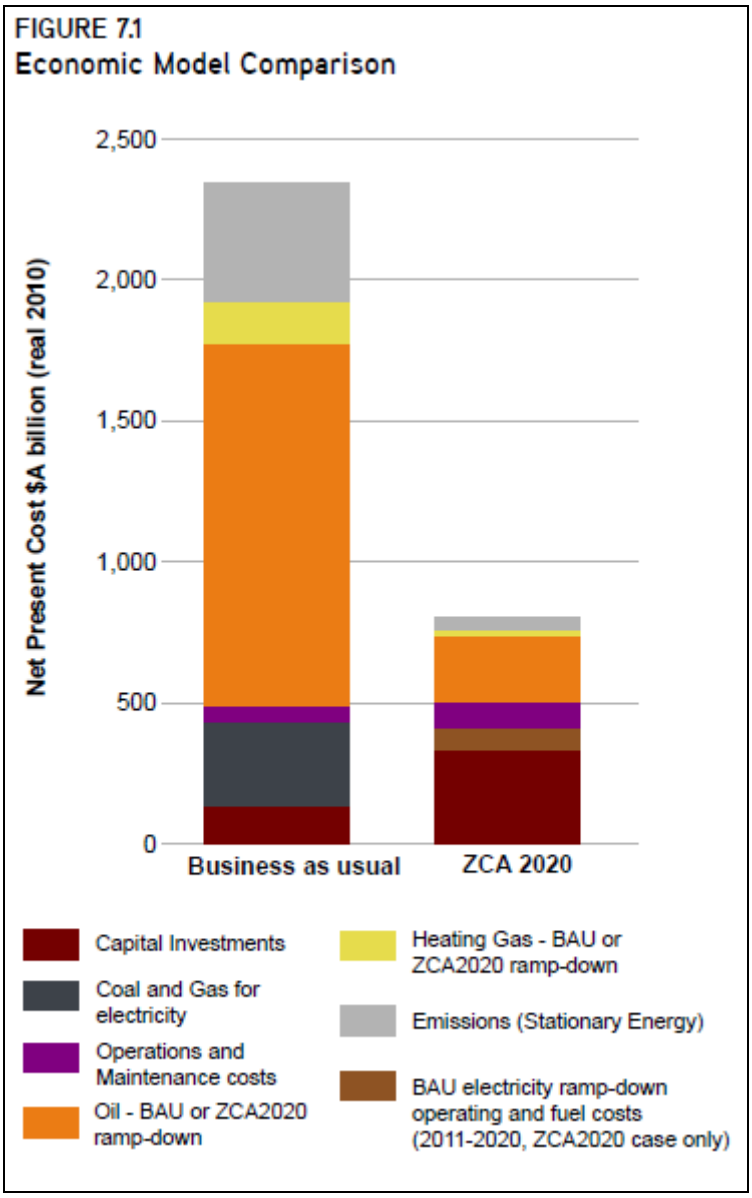

Figure 7.1: Cost comparison from BZE's Zero Carbon Australia Stationary Energy Plan

The *Garnaut Climate Change Review*, 2008, found that the costs of action on climate change in the 21st century are less than the costs of inaction. The review found that GNP is higher with emissions mitigation than without by the end of the century, and that the loss of present value of median climate change GNP through the century will be outweighed by other benefits: "On a balance of probabilities, the failure of our generation on climate change mitigation would lead to consequences that would haunt humanity until the end of time."

There appears to be no question that in terms of equity, strong action on climate change in this decade, including moving to a strong and enforceable Renewable Energy Target of 100% renewables by 2020, is the most equitable solution for all current and future Australians. Any lesser target will lead to more severe effects from climate change and a bias towards a short-term profit for certain individuals and businesses from the exploitation of fossil fuels over the long-term benefit for all Australians.

2. Is the target trajectory driving sufficient investment in renewable energy capacity to meet the 2020 target? How much capacity is needed to meet the target? How much is currently committed? Has the LRET driven investment in skills that will assist Australia in the future?

The LRET has certainly been successful in driving the *development* of renewable energy projects in Australia – there are currently about 7 GW of wind energy with development approval and a further 20 GW of wind energy under development – however to date the target trajectory has *not* been driving the financial close, investment or construction of these projects and is not expected to do so for at least another three to four years. This is mostly due to:

- The presence of a huge number of phantom LGC certificates created by the solar multiplier meaning that electricity retailers and liable parties are able to purchase cheap certificates that have no bearing on renewable energy investment or generation, and hence avoid the need to purchase certificates from developers or owners of renewable energy projects; and
- Continuing uncertainty about the future of the RET leading to a lack of investment by developers and an unwillingness by offtakers and liable parties to sign offtake agreements.

According to *Energy in Australia 2012* (Australian Government Bureau of Resources and Energy Economics), 242 TWh of electricity was generated in Australia in 2009-10. Of this, renewables accounted for 8% (19,711 GWh) as per page 9 of the RET Review Issues Paper. Given that the interim annual target in the REE Act, s 40, adjusted according to the number of valid certificates as at the end of 2010 and as shown in Figure 5.2 of the Issues Paper, appears to be approximately 17,000 GWh for 2012, and given that in 2009-10, renewable energy already provided 19,711 GWh, the target trajectory to date appears to be superfluous and would have had no effect at this stage. Indeed even if there were no additional renewable generation installed since 2009-10, it won't be until 2016 that the interim annual target is larger than the 2009-10 generation figure.

From the above analysis it appears that the RET scheme and target trajectory has and will be totally ineffective until at least 2016, at which point Australia will still be producing only 8% of our electricity from renewable sources assuming total demand is constant at 242 TWh as in 2009-10 (and if electricity demand was to increase then renewables would be providing less than 8%). This will leave 4 years from 2016 to 2020 for the construction of enough renewable generation infrastructure to meet 12% of our electricity needs (the difference between the existing 8% and the 20% target).

As a theoretical example, for the existing 2020 LRET target of 41,000 GWh/yr, 19,700 GWh would be expected to be generated in that year by renewable infrastructure that already existed in 2009-10 so the balance of 21,300 GWh would be required. If this were all to be provided by wind power (currently the cheapest form of renewable energy), with for example an average capacity factor of 35%, then 6.95 GW of wind generation would need to be constructed in those 4 years. Given that there is currently only 2.18 GW of wind power installed in Australia (Table 15, page 52 of *Energy in Australia 2012*, Australian Government Bureau of Resources and Energy Economics), this would require the construction of more than three times the total current installed wind capacity over a 4-year period starting in 2016. Considering the slow rate of construction of wind projects to date and the continuing lack of interest from retailers in signing offtake agreements at a level that would make renewable projects viable, it would appear unlikely that the LRET target will be achieved under the current conditions.

The extraordinary game of bluff in Australian renewables, REnewEconomy, 24 April 2012, backs up this view, stating that while Australia should be busily constructing wind farms and contemplating the business case for other technologies to meet the country's bipartisan

renewable energy target of 20 per cent by 2020, the industry is at a virtual standstill, as has been the case for several years. It notes that from 2016, the target increases at a rate that will require today's installed capacity to be constructed each year between then and 2020.

It points out that the uncertainty in the future of the Carbon Price and the RET has led banks to be reluctant to provide long-term financing (for example wind developers in other countries can lock in financing for 15 years while in Australia contracts are as short as 5 years, meaning developers have to carry a refinancing risk as well); that the big three retailers have already purchased enough cheap certificates to last a number of years and are wielding their significant market power to play hard ball on power purchase agreements, the essential ingredient for a renewable energy developer if it is to get bank financing; that Origin has been pushing for delays to or reductions in the target (perhaps due to their substantial recent investments in coal-seam gas); and that AGL has been using the depressed renewables market to cheaply purchase renewable developments such as the massive Silverton wind farm near Broken Hill.

There is more than sufficient development to meet the 2020 target. There are currently about 7 GW of wind energy with development approval and a further 20 GW of wind energy under development.

- If the 7 GW of wind energy with development approval was constructed, then this would imply generation of 21,462 GWh/yr[2].
- According to *Energy in Australia 2012* (Australian Government Bureau of Resources and Energy Economics), and as per page 9 of the Issues Paper, renewables accounted for 19,711 GWh of electricity generation in 2009-10.
- These two sources of renewable energy are sufficient to meet the 41,000 GWh/yr 2020 LRET target.
- In addition to this, there is another 6 GW of wind energy currently in the approvals process that is likely to be approved in the next few years, giving the potential for a further 18,500 MWh/yr by 2020.

Despite the large amount of development projects, if investment and construction of these projects continues to be delayed it will become impossible to construct the required number of projects by 2020 to meet the LRET target.

Has the LRET driven investment in skills that will assist Australia in the future?

It is difficult to ascertain whether the LRET has driven investment in skills that will assist Australia in the future. The renewables industry is growing, albeit not at a huge pace. However much of the investment and demand for skills is being driven by demand for renewable energy to offset power usage by desalination projects and by demand for small-scale solar which is not part of the LRET. In the wind industry, which to date has provided the cheapest form of renewable energy and hence would be expected to be dominating the RET, investment over the last few years has been chiefly driven by demand for renewable generation to offset power for desalination projects (such as the Macarthur and Oaklands Hill wind farms in Victoria; Capital wind farm in NSW; and Collgar, Mumbida, and Emu Downs wind farms in WA), and by demonstration projects by new turbine manufacturer entrants trying to prove their technology in the Australian market.

Table 5 of the *Clean Energy Australia Report 2011*, Clean Energy Council, November 2011, below, shows that of the total renewable capacity under construction in 2011, 64% was driven by the requirement to offset desalination plant energy use (Macarthur, Collgar and Oaklands Hill).

[2] Assuming an average capacity factor of 35%

Table 5. Major renewable energy projects under construction

Source: Clean Energy Council Renewable Energy Database

FUEL SOURCE	LOCATION	OWNER	STATE	YEAR TO BE COMPLETED	INSTALLED CAPACITY
Wind	Macarthur	AGL/Meridian Energy	VIC	2013	420 MW
Wind	Collgar	UBS ITT/REST	WA	2012	205 MW
Wind	Musselroe	Hydro Tasmania	TAS	2013	168 MW
Wind	Crookwell 2	Union Fenosa	NSW	2014	92 MW
Wind	Oaklands Hill	AGL	VIC	2012	67 MW
Wind	Hallett Stage 5 (Bluff Wind Farm)	AGL	SA	2011	53 MW
Wind	Woodlawn	Infigen Energy	NSW	2011	48 MW
Bioenergy	Victoria 2	Sucrogen	QLD	2011	19 MW
Landfill gas	Woodlawn Bioreactor	Veolia Environmental Services	NSW	2011	1.1 MW
Solar PV	Carnarvon	EMC Solar	WA	2011	0.3 MW
				TOTAL CAPACITY UNDER CONSTRUCTION	1073.4 MW

In the solar industry, large-scale installations have been driven by direct Government assistance - again not chiefly by the LRET. Table 14 of the *Clean Energy Australia Report 2011*, Clean Energy Council, November 2011, below, shows the largest existing commercial solar plants in Australia to date. Each of the MW-scale projects (Liddell, St Lucia Campus, Adelaide Showgrounds and Uterne) received direct Federal or State Government funding.

Table 14. Examples of existing commercial solar plants

Source: Clean Energy Council Renewable Energy Database

FUEL SOURCE	LOCATION	OWNER	STATE	YEAR	INSTALLED CAPACITY
Solar thermal concentrator	Liddell	Areva/Macquarie Generation	NSW	2009	3 MW
Solar PV	St Lucia Campus	University of QLD/ Ingenero	QLD	2011	1.2 MW
Solar PV	Adelaide Showgrounds	First Solar	SA	2009	1 MW
Solar PV	Uterne	Alice Springs Consortium	NT	2011	0.97 MW
Solar PV	Marble Bar	Horizon Power	WA	2010	0.58 MW
Solar PV	Singleton	Energy Australia	NSW	1998	0.39 MW
Solar PV	Alice Springs	Alice Crown Plaza	NT	2009	0.3 MW
Solar PV	Ballarat	Central Victoria Solar City Consortium	VIC	2009	0.3 MW
Solar PV	Bendigo	Central Victoria Solar City Consortium	VIC	2009	0.3 MW
Solar PV	Gold Coast	Carrara Stadium	QLD	2011	0.25 MW
Solar PV	Alice Springs	Alice Springs Airport	NT	2010	0.24 MW
Solar PV	Carnarvon	EMC Solar	WA	2011 under construction	0.3 MW

Although the LRET may not be the driving force behind the investment in skills, other factors that have led to the realisation of the projects outlined above and the associated development, construction, operation and maintenance skills will, without doubt, assist Australia in the future as the country inevitably moves towards increasing renewable electricity generation.

3. In the context of other climate and renewable policies, is there a case for the target to continue to rise after 2020?

In the context of climate policies and the cost of climate change impacts, there is a case for the target to be significantly increased both prior to and after 2020. A 20% target is too low based on the accepted climate change science (refer to the *IPCC Fourth Assessment Report: Climate Change 2007*, "AR4") and there would seem a strong imperative to increase the Renewable Energy Target to 100% after 2020, or in fact even by 2020.

A 20% target is also low based on what many other countries are seeking to achieve. As mentioned in the Issues Paper, there are legislated or planned renewable energy targets in over 85 countries, more than half of which are in developing countries. A significant number of countries have higher targets than Australia, including:

- Canada has a renewable *electricity* target of 90% by 2020.
- The USA has an 80% renewable *electricity* target by 2035.
- The 27 member states of the European Union (EU) have a combined target of 20% of all *energy* use to come from renewables by 2020, which includes transport and heating fuels in addition to electricity.
- Each EU member country has its own renewable *energy* target that includes all energy consumption, not just electricity, for example:
    - Norway: 67.5% by 2020;
    - Sweden: 49% by 2020;
    - Latvia: 40% by 2020;
    - Finland: 38% by 2020;
    - Austria: 34% by 2020;
    - Portugal: 31% by 2020;
    - Denmark: 30% by 2020 and 100% by 2050;
    - Estonia and Slovenia: 25% by 2020;
    - Romania: 24% by 2020;
    - France and Lithuania: 23% by 2020;
    - Spain and Croatia: 20% by 2020;
    - All the above targets cover all *energy* consumption, not just electricity. The remaining 13 EU countries (Germany, Greece, Italy, Bulgaria, Ireland, Poland, the UK, the Netherlands, Slovakia, Belgium, the Czech Republic, Cyprus, Hungary, Luxembourg and Malta) each have 2020 renewable *energy* targets of between 10 and 18%. In comparison, in Australia, renewable energy sources currently make up 4.8% of our total energy supply and there is no all-encompassing renewable *energy* target. Considering that the share of renewables in Australia's total energy mix has remained largely constant at around 5 per cent over the last decade, it appears unlikely that Australia's existing policies, including the RET, would achieve anything close to approaching the minimum target of any of the 27 countries in the European Union.
    - In the EU, the energy (ie not just electricity) obtained from renewable sources is estimated to have contributed to 12.4% of the European Union's overall energy consumption in 2010, up from 11.7% in 2009. As per the dot point above, in Australia the energy obtained from renewable sources has remained largely constant at around 5 per cent over the last decade.

    - Austria had a 78% renewable *electricity* target by 2010, Portugal 45%, Finland 31.5%, Spain 30%, Denmark 29%, and Greece a 20% renewable *electricity* target by 2010.
- The UK is considering introducing a 30% renewable electricity target by 2020 and aim to reduce the carbon intensity of electricity by 90% by 2030 (from 500 gCO2/kWh today to 50 gCO2/kWh in 2030).
- Morocco has a 40% renewable energy target by 2020 (covering all energy consumption), including 2 GW of wind and 2 GW of solar electricity plants.
- India has a target of 14.5 GW of additional renewable electricity by 2015 and 20 GWh of solar electricity by 2022;
- Saudi Arabia has a target of 41 GW of solar by 2032.
- Mexico: 40% by 2014.
- New Zealand: 90% by 2025.
- China: 17% of China's electricity and 8% of China's energy came from renewable sources in 2007. This is projected to increase to 21% renewable electricity and 15% renewable energy by 2020.
- Japan is shifting its focus from nuclear to renewable energy.
- The G8 (France, Germany, Italy, Japan, the United Kingdom, the United States, Canada and Russia), comprising 51% of 2011 global nominal GDP and 42.5% of global GDP, agreed in July 2008 a target to cut global emissions by 50% in 2050. Building on this, in July 2009 the G8 agreed an objective to limit temperature change to 2°C, and that developed countries should cut emissions by 80% in 2050 as an appropriate contribution to the 50% global cut.

Sources:

- *What Others are Doing*, Australian Government 2012, http://www.cleanenergyfuture.gov.au/why-we-need-to-act/what-others-are-doing/
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- *Randy, green voters might like a taste of Saudi solar laws*, RenewEconomy, 24 July 2012.
- *Renewable Energy Policy*, UK Department of Energy and Climate Change, 2012, http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/renewable_ener.aspx
- *Review of Renewable Energy*, UK Committee on Climate Change, 2012, http://theccc.org.uk/topics/renewables
- *Renewable energy in the EU: which countries are set to reach their targets*, The Guardian, 19 June 2012, http://www.guardian.co.uk/news/datablog/2012/jun/19/renewable-energy-consumption-eu-targets
- *International Negotiations*, UK Committee on Climate Change, 2012, http://theccc.org.uk/topics/international-action-on-climate-change/international-negotiations
- *Powering China's Development: The Role of Renewable Energy*, Worldwatch Institute, November 2007, http://www.worldwatch.org/node/5491.

In the context of other climate and renewables policies there is a strong case for the Australian target to be increased significantly both prior to and after 2020.

4. Should the target be a fixed gigawatt hour target, for the reasons outlined by the Tambling Review, with the percentage being an outcome?

As outlined in the Tambling Review, the target should be a fixed gigawatt hour target. A fixed GWh target is established practice throughout the history of the RET and as discussed in the Issues Paper the 2003 Tambling review concluded that:

"The Review Panel [is] convinced … that any future target should continue to be expressed in terms of a fixed GWh level. By their nature, projections of electricity demand contain a degree of uncertainty. The changes in projected electricity demand that have occurred since the MRET was announced demonstrate that a percentage-based target would require the corresponding generation level to be regularly revised. This would adversely impact on market certainty. Risk is a key factor in investment decision making, so that any changes to MRET that would reduce market certainty would also reduce the prospect of attracting the required financial backing for projects. The Review Panel considers that a fixed target is more compatible with market certainty, with MRET's industry development objective, which defines a level of renewable energy generation rather than a percentage of a fluctuating electricity market over which the industry has no control."

We support this statement. Recent discussion about this RET review and statements from parties advocating a reduction in the RET have created significant market uncertainty which has led to both increased risk and difficulty in obtaining financial backing for all power projects (renewable and non-renewable), both internally and from external debt providers.

There is considerable increase in uncertainty should the target be moved from a fixed GWh amount to a percentage that is regularly reviewed.

In addition, the Commonwealth commitment is to "*at least* 20% of Australia's electricity from renewable sources by 2020". This is consistent with being a fixed gigawatt hour target, with the potential to increase the target if it is reasonably expected that the fixed target will fall short of the 20%.

5. Should the target be revised to reflect changes in energy forecasts? If so, how can this best be achieved – as a change in the fixed gigawatt hour target, or the creation of a moving target that automatically adjusts to annual energy forecasts? How should changes in pre-existing renewable generation be taken into account? What are the implications in terms of economic efficiency, environmental effectiveness and equity?

The target should not be revised to reflect changes in energy forecasts unless the revision is towards an increase in the target. It is more relevant that the target be revised to reflect changes in the projected effects of climate change and the level of urgency for action to cut emissions.

Energy forecasts fluctuate from year to year, and a changing target based on a moving energy forecast would create a significant amount of uncertainty for investors and purchasers of all electricity and LGCs. Uncertainty inevitably leads to higher costs and less efficiency – for example, developers of both renewable and fossil-fuelled plant will face higher funding costs from banks as the policy position will be less certain over the life of the generation asset.

The RET is a mechanism to encourage and bring forward the timing of the inevitable generation and use of 100% renewable energy in Australia. It would be backward to reduce

the target at any point as it would have the effect of bringing Australia further from our eventual position and encouraging the construction of non-renewable power plants that will inevitably be required to shut down for environmental reasons before the end of their lifetime. This would divert attention from construction of long-term power generation plant and would be likely to lead to claims for compensation from power plant owners who are required to shut down fossil-fuelled plant that has not reached the end of its design lifetime.

In terms of economic efficiency, environmental effectiveness and equity, the price of a tonne of carbon emissions should directly reflect the incremental cost to the environment, and in turn the incremental cost to humanity, of that tonne of carbon. Electricity generation from coal and gas does have a significant impact and this impact should be reflected directly in electricity policy.

Please refer to our response to question 1 (Are the existing 41,000 GWh LRET 2020 target and the interim annual targets appropriate) for further comments on the implications of revising the target in terms of economic efficiency, environmental effectiveness and equity.

6. What are the costs and benefits of increasing, or not increasing, the LRET target for Clean Energy Finance Corporation-funded activities? What are the implications in terms of economic efficiency, environmental effectiveness and equity?

The LRET target should be increased for any Clean Energy Finance Corporation-funded activities so that any LGCs generated by CEFC funded projects are additional to the existing 41,000 GWh target.

If the LRET target was to remain the same then, as discussed in the Issues Paper, CEFC investment would affect the mix of renewable energy generation rather than increasing renewable generation beyond the 41,000 GWh target. This would mean no increase in the overall number of renewable energy projects compared to the amount of generation that would have been constructed without the CEFC - ie, it would be wasting money to achieve an outcome that would have happened anyway. This would be both economically and environmentally ineffective.

The purpose of the CEFC should be to fund projects using emerging renewable technologies, such as solar thermal, that are not yet cost-competitive with established renewables. If the LRET was not increased for CEFC projects then the CEFC program would have the effect of reducing investment in the most cost-competitive forms of renewable energy (such as wind and solar PV) which are likely to be ineligible for CEFC funds. This would seem at odds with the efficient operation of the electricity market, whose purpose should be to provide reliable electricity at the lowest cost to consumers, and certainly inequitable for developers of wind farms and solar PV projects who would be disadvantaged by the CEFC "picking winners".

If the LRET target was not to change based upon CEFC-funded projects, it would increase the uncertainty around LGCs for developers of renewable energy projects and lead to further risk and costs for non-CEFC-funded projects.

The LRET target should be increased for any Clean Energy Finance Corporation-funded activities so that any LGCs generated by CEFC funded projects are additional to the existing 41,000 GWh target.

The Issues Paper states that increasing the target for CEFC funded projects would require "a prediction of how many certificates CEFC funded projects are likely to produce out to 2030, which is likely to be difficult in the short-medium term". Considering that financing for every electricity project is dependent on having an accurate estimate of the amount of generation expected, one would think that the number of certificates likely to be generated by any CEFC-

funded project over the period from its commissioning to 2030 would be possible to estimate relatively accurately, with the target increased accordingly.

7. Is the calculation of individual liability using the Renewable Power Percentage the most appropriate methodology?

Yes.

8. Is it appropriate to set the Renewable Power Percentage by 31 March of the compliance year?

No comment.

9. Is the shortfall charge set at an appropriate level to ensure the 2020 target is met?

In order for the RET to be effective, the shortfall charge should be set such that the penalty is a sufficient incentive for parties to purchase LGCs rather than suffer the penalty. As such the shortfall charge should be increased, as a minimum so as to be indexed to CPI. This was demonstrated by the original RET scheme in 2000-2009, for which the shortfall charge was rendered worthless as a penalty by the end of the scheme due to inflation.

Given the lack of investment in renewable energy generation under the current RET scheme to date, and the likely outcome of not meeting the 2020 target if the operation of the RET is left unchanged, the shortfall charge should be set much higher to ensure that the 2020 target is met.

As per the response to Question 1, it appears that the RET scheme will not lead to any new construction of renewable projects until 2016 due to the current oversupply of LGCs from the solar multiplier combined with the excess LGCs generated due to the low starting point and slow ramp-up of the target from 2010 – 2016.

Considering the slow rate of construction of renewable projects to date under the RET due to the excess solar multiplier certificates and the low interim annual targets, combined with the associated low interest from retailers in signing offtake agreements at a level that would make renewable projects viable, it appears the 2020 target will not be met under the existing RET scheme and LRET target. A significant increase in the shortfall charge may be a signal to liable entities that it is worth preparing for the 2020 target prior to 2020. The current approach of playing the LGC market whilst prices are low seems to be quite a short-term view considering that it will take a number of years for large renewable energy projects to go from development approval to construction. This will be particularly significant if a large number of projects are all being constructed at the same time just prior to the 2020 deadline. At this stage it does not appear that liable entities are preparing for the interim yearly targets down the track and a significant increase in the shortfall charge would flag to the market that the Government intends to follow through with meeting the 41,000 GWh 2020 target.

10. Are there other issues relating to the liability or surrender framework the Authority should consider?

The ability to bank any surplus of certificates from year to year has served to render the RET ineffective in terms of encouraging the construction of new renewable generation projects. It has created a market where many sellers of LGCs are banking certificates and waiting for the currently low price to increase, and many of the liable entities are buying LGCs as low prices

and banking them to use in future years against their LGC liabilities. As a result, there is no demand for physical renewable infrastructure. This market for certificates is far removed from the purpose of the RET scheme as a means to achieve "at least 20% of Australia's electricity from renewable sources by 2020". As a comparison, it is not possible to bank carbon permits under the Clean Energy Legislative Package (Australian Government, 2012), as they must be surrendered in the vintage year that they are created.

The Authority could consider ways in which to ensure that any surplus LGCs from one year are not able to be used by liable entities in future years, thus aligning the focus of the electricity industry to the physical target of 20% renewables by 2020 rather than the abstract tradable commodity of certificates.

11. What are the costs and benefits of the current exemption arrangements? Are they appropriate?

The RET includes partial exemptions for trade-exposed entities. Considering that at least 85 countries have some form of renewable energy target, such exemptions may not be relevant.

As the exemptions mean that other market participants have increased liability, this would not seem fair, particularly if the exempt parties are those that are contributing in a larger proportion than other companies to the emission of greenhouse gases (eg petroleum refiners who may currently apply for an exemption from the RET). The exemption may be giving those exempt companies an unfair cost advantage compared to the majority of Australian companies who are liable under the RET for the electricity they use.

Self-generators, who are not liable under the RET, presumably include a large number of mining projects in Western Australia who have their own off-grid electricity generation. It is not equitable that those companies be exempt from a national scheme. Again, the broader community and other power users are unfairly exposed to increased liability due to these exemptions.

12. The self-generator exemption pre-dates the emissions intensive, trade exposed partial exemptions – are both required? If so, why?

As any exemptions mean that all other users of electricity have increased liability, it is suggested that no entities are given special treatment under the RET. As such, no exemptions should be applicable.

13. What, if any, changes to the current exemption arrangements should be made? What would be the impact of those changes on directly affected businesses and the broader community?

It is suggested that it would be more equitable for all businesses and all electricity consumers if there were no exemptions for any parties under the RET scheme. As the implementation of the RET scheme involves trading in Renewable Energy Certificates, there is no reason why self-generators could not be involved in that market despite not being directly connected to a source of renewable energy. Indeed, if self-generators were not exempt from the RET there would be an incentive for them to investigate the addition of renewable energy towards their power needs.

14. Is a list approach to 'eligible renewable sources' appropriate?

The list approach to "eligible renewable sources" is appropriate, and as stated in the Issues Paper this list is consistent with the definition set out in the Intergovernmental Panel on Climate Change 2011 report, *Renewable Energy Sources and Climate Change Mitigation.*

15. Are there additional renewable sources which should be eligible under the REE Act?

We do not believe that any additional renewable sources should be eligible at this time.

16. Should waste coal mine gas be included in the RET? Should new capacity of waste coal mine gas be included in the RET?

Considering that the burning of coal is the chief contributor to global warming and climate change, and hence the biggest reason why the RET is required, it would seem absurd that waste coal mine gas be included in the RET. The *Renewable* Energy Target is designed to promote renewable energy; waste coal mine gas is not renewable.

17. What would be the costs and benefits of any recommended changes to eligible renewable sources?

It is recommended that there be no changes to the list of eligible renewable sources.

18. Are the LRET accreditation and registration procedures appropriate and working efficiently?

To our knowledge, the LRET accreditation and registration procedures are appropriate and working efficiently.

Small-scale Renewable Energy Scheme

19. What do you consider to be the costs and benefits of having a separate scheme for small-scale technologies?

The separate scheme for small-scale technologies should allow the large-scale LRET to function as intended. Otherwise, as demonstrated in 2010-2011, specific incentives for small-scale generation such as the solar multiplier reduced the incentive for large-scale projects under the RET and reduced the effectiveness of the RET itself due to the creation of large numbers of certificates that were not associated with generation.

20. Should there continue to be a separate scheme for small-scale technologies?

Yes.

21. Is the uncapped nature of the SRES appropriate?

Yes.

22. What do you see as being the costs and benefits of an uncapped scheme in terms of economic efficiency, environmental effectiveness and equity?

Considering that the number of small-scale STCs is not equivalent to the amount of generation being installed due to the solar multiplier and due to the amount of generation being estimated based on the location of the small-scale system at the time of installation (deeming) rather than being tracked year-to-year, the number of certificates is unlikely to be a good reflection of the amount of renewable electricity being generated by small-scale projects. Such practices don't take into account potential shading of panels, non-ideal orientation or tilt of panels, or breakdowns of equipment in individual installations, each of which may lead to significant reductions in the power produced from a system when compared to its "deemed" generation.

Considering the potential low correlation between the number of STCs and the amount of generation from small-scale installations, there is a significant benefit to the scheme being uncapped in terms of meeting the goal of the RET and the Commonwealth commitment to "at least 20% of Australia's electricity from renewable sources by 2020".

23. Is the SRES driving investment in small scale renewable technologies? Is it driving investment in skills?

The SRES, combined with the various state-based solar feed-in tariffs appear to be driving investment in small-scale renewable technologies – particularly solar PV. However the uptake of household solar PV systems appears to have slowed considerably as the feed-in tariffs have been reduced in each state, so it remains to be seen whether the SRES alone will continue to be a driver for small-scale investment. Considering that the SRES is treated as a reduction in the upfront capital cost, it is likely that any amount of reduction in capital cost due to the SRES will help to drive further investment.

24. What is the appropriate process for considering and admitting new technologies to the SRES?

No comment.

25. Should any additional small-scale technologies be eligible to generate small-scale technology certificates?

The current list of eligible technologies – solar PV, wind, hydro and solar water heaters – is appropriate. As per the Council of Australian Governments' recommendations in the *Review of Specific RET Issues*, it is considered that no new small-scale generation technologies are sufficiently developed for inclusion in the RET.

26. Is it appropriate to include displacement technologies in the SRES?

It is not appropriate to include displacement technologies in the SRES. As the RET was developed as a means to achieve the Commonwealth commitment to "at least 20% of Australia's electricity from renewable sources by 2020", displacement technologies would not be included in this definition.

However, as it is just as important (if not more important) to reduce our use of electricity as it is to ensure that such use comes from renewable sources, displacement technologies should have their own incentive scheme to encourage their installation and use.

As outlined in Table 6.2 of the Issues Paper, the installation of solar water heaters has been reducing each year since 2009. This indicates that the SRES is not an effective mechanism to encourage their installation.

27. Should additional eligible technologies under the SRES be limited to generation technologies?

Yes, as per the response to 26, above.

28. Is deeming an appropriate way of providing certificates to SRES participants?

Deeming is a useful method of providing certificates to SRES participants as (1) it would be impractical for most participants to apply annually for certificates and (2) it provides a worthwhile upfront incentive to offset the initial capital cost outlay of the system.

However deeming is likely to cause a huge uncertainty in terms of the generation actually produced when measured against the deemed certificates provided for a system – there is perhaps little incentive for households to repair underperforming systems or breakdowns given that many state-based feed-in tariffs are now lower than the cost of electricity purchased from the grid. Further, many systems will be installed in places that generate either more or less than the deemed generation - many panels will be shaded at various times of the day, many will not be installed at optimum tilt or orientation, and some systems will have tracking. As many household PV systems are not monitored at all after their installation, it is likely that most owners do not check that their system is performing as expected.

A feed-in tariff would seem to be a much clearer way to compensate small generators for the actual amount of electricity produced. It would not provide an upfront subsidy, but with the

cost of systems reducing and options such as solar leasing now available, an upfront subsidy is not so important.

29. Are the deeming calculations for different small-scale technology systems reasonable?

The calculations are very general, but given that the effect of the deeming is mostly to provide a reduction in the upfront cost to the owners of small-scale systems, and given the large number of factors that could affect the performance of a system, such general calculations are reasonable.

As per the comments to 28, above, a feed-in tariff would seem to be a much clearer way to compensate small generators for the actual amount of electricity produced. It would not provide an upfront subsidy, but with the cost of systems reducing and options such as solar leasing now available, an upfront subsidy is not so important.

30. What are the lessons learned from the use of multipliers in the RET? Is there a role for multipliers in the future?

The use of the solar multiplier was a disaster for large-scale renewable generation projects and developers, who could not compete against the 'phantom' certificates created from the solar multiplier and which unfairly skewed the market towards more costly small-scale solar PV compared to cheaper large-scale wind or solar power. Similarly, it was environmentally ineffective considering that the effectiveness of the scheme was reduced in proportion to the solar multiplier (due to the 5x solar multiplier, all certificates from *all* renewable technologies were then effectively only worth one fifth of their generation value). It has been estimated that the solar multiplier led to an increase in emissions compared to the outcome that would have eventuated had the solar multiplier not existed, due to its effect of stopping investment in large-scale generation backed by real certificates.

The large-scale renewable market is only now beginning to recover as the oversupply of certificates is reducing and liable entities are beginning to consider their liability under the RET for the last few years prior to 2020.

The effect has been that despite the large numbers of certificates that have been created, there is not a corresponding amount of electricity being generated. This has rendered the RET virtually useless to date as a means of encouraging development of new renewable power projects and, as there are still excess certificates available in the market, it leaves the situation where it may not be likely that the Commonwealth's commitment to "at least 20% of Australia's electricity from renewable sources by 2020" will be achieved.

If multipliers are to be used in future, it is fundamental that they do not provide direct competition with technologies that are not eligible for such multipliers and that they do not water down the effectiveness of the RET.

A feed-in tariff would seem to be a much clearer way to compensate small generators for the actual amount of electricity produced rather than using a multiplier. It would not provide an upfront subsidy, but with the cost of systems reducing and options such as solar leasing now available, an upfront subsidy is not so important. Using a national or state-based feed-in tariff rather than a multiplier would ensure that the RET was not unfairly skewed towards a particular generation type or installation size and that the RET was not watered down by the phantom certificates that are not in proportion to electricity generation.

31. Is the Small-scale Technology Certificate Clearing House an effective and efficient mechanism to support the operation of the SRES?

The STC Clearing House and registration for STCs is not understood by the vast majority of householders who have installed small-scale systems and received STCs. Thus it is left to installers to be or deal with registered agents for STCs and the majority of householders end up receiving the $25 to $30 secondary market STC price rather than the $40 clearing house price.

As per the comments in the Issues Paper, a feed-in tariff would seem to be a much clearer way to compensate small generators for the actual amount of electricity produced. It would not provide an upfront subsidy, but with the cost of systems reducing and options such as solar leasing now available, an upfront subsidy is not so important.

32. Should changes be made to the Clearing House arrangements? If so, what would be the costs and benefits of any suggested alternative approaches?

As per the comments in the Issues Paper, a feed-in tariff would seem to be a much clearer way to compensate small generators for the actual amount of electricity produced. It would not provide an upfront subsidy, but with the cost of systems reducing and options such as solar leasing now available, an upfront subsidy is not so important.

33. Is $40 an appropriate cap for small-scale certificates given the recent fall in cost of some small-scale technologies, particularly solar PV?

Given that the majority of householders receive the secondary market STC price ($25 - $30) rather than the $40 cap, the cap would seem somewhat irrelevant.

34. Are the SRES administration arrangements appropriate and working efficiently?

No comment.

Diversity of renewable energy access

Should the RET design be changed to promote greater diversity, or do you think that, to the extent that there are barriers to the uptake of other types of renewable energy, these are more cost-effectively addressed through other means?

The RET should encourage the most cost-effective forms of renewable energy without picking winners in terms of technology or scale. To the extent that there are barriers to the uptake of other types of renewable energy, they should be addressed outside the RET scheme.

What would be the costs and benefits of driving more diversity through changes to the RET design?

The most cost-effective form of renewable energy generation during the life of the RET to date has been large-scale wind. It is expected that at some time between now and 2020, wind may be joined by solar PV and potentially solar thermal as cost-effective technologies, both around the world and in Australia.

In order to achieve a large-scale shift in generation towards renewables in a short timeframe with the lowest impact on consumers, the RET should support lowest cost technologies that are currently in commercial operation. There does not seem to be any benefit in driving more technology diversity which would imply supporting developing technologies that are not yet demonstrated commercially.

Review frequency

What is the appropriate frequency for reviews of the RET?

A two-year review frequency would seem reasonable given the increasing urgency with which countries around the world are taking steps to tackle climate change, but the review should be limited to increasing the target and not have the investment uncertainty around possible decreases in the target. The 2-year review period, combined with the vested interests of certain parties to reduce their RET liability or to make political gain, has adversely affected the entire electricity industry. It has led to uncertainty, increasing risk and project costs, and delayed investment decisions, both in terms of renewables and fossil fuelled generation.

What should future reviews focus on?

Future reviews of the RET scheme should focus on:

- The effectiveness of the scheme and whether it is on track to meet its purpose and its target;
- Whether the target should be increased;
- Whether the penalty (shortfall charge) should be increased;
- Whether there are other barriers affecting the efficient, effective and equitable deployment of renewable electricity generation projects, such as discriminatory planning laws for wind farms, and how such barriers can be addressed.
- Whether there are other schemes that should be put in place to complement the RET scheme, such as energy efficiency programs to encourage a reduction in electricity use,

or a renewable *energy* target in addition to the existing RET which is only a renewable *electricity* target.

Further Comments

In addition to the responses to the questions posed in the Issues Paper, we wish to add the following comments in relation to the RET review:

LGCs versus electricity generation
The existence of a certain number of LGCs does not imply that the Commonwealth commitment to "at least 20% of Australia's electricity from renewable sources by 2020" will be met, since banked LGCs from previous years are not equivalent to the generation of electricity in the current year.

Effectiveness of previous renewable energy schemes
Page 27 of the Issues Paper states that the RPP for 2011 was 5.62% and the RPP for 2012 is 9.15%. These are extremely low targets considering that a number of states in Australia were supposed to have already met their own renewable energy targets (including Victoria's 10% renewable energy target by 2010[3]; the NSW NRET of 10% by 2010[4]; and South Australia's renewable energy target of 20% by 2014[5]).

With the exception of the South Australian scheme, renewable energy schemes that have existed in Australia to date have not met their targets. For example,

- The 2001 MRET 9500 GWh target was supposed to lead to an additional 2% renewables by 2010 however, as outlined in the Issues Paper, it only represented somewhere between 0.1% and 1.4% of total demand;
- Only 3.9% of Victorian power came from renewables in 2011 despite the Renewable Energy Target that was supposed to source 10% from renewables by 2010. In comparison, 3.6% of Victorian power came from renewables in 2002 (prior to the target).[6]
- Renewable generation in NSW is currently no more than 6% of total generation although NSW had a 10% target by 2010.[7]

It would be prudent to consider these outcomes in light of the current status of the RET scheme to ensure that the RET does not also turn out to be ineffective.

Support for fossil-fuelled generation
We note that the Queensland Gas Scheme has been in operation since 2005, which required 13% of Queensland's electricity consumption to be from gas by 2009, 15% by 2010 and which appears to still be operating at 15%[8]. This may be relevant to the RET review in the context of state and federal governments giving priority to or providing support for fossil-fuelled generation over renewables if the RET was to be reduced.

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[3] *Victoria Leads Nation on Renewable Energy Target*, Media Release from the Minister for the Environment, Minister for Energy and Resources, Victorian Government, 17 July 2006.
[4] *NSW Renewable Energy Target Explanatory Paper*, NSW Government, November 2006.
[5] *A Renewable Energy Plan for South Australia*, Government of South Australia - Office of the Commissioner for Renewable Energy, October 2011.
[6] *ALP energy targets a 'gimmick'*, The Age, 7 April 2011.
[7] *Renewable Energy*, NSW Government Trade and Investment, 2012, http://www.trade.nsw.gov.au/energy/sustainable/renewable
[8] *Queensland Gas Scheme*, Queensland Government – for Business and Industry, 10 August 2011. http://www.business.qld.gov.au/industry/energy/gas/queensland-gas-scheme

As noted in the response to Question 1, Australia's coal and gas reserves are increasingly in demand and the Australian energy sector has responded by ramping up exports. This has already resulted in a substantial increase in the domestic price of these commodities as they compete with China, India and Japan. Domestic gas prices are likely to rise further as they move toward parity with international markets and any continued support for fossil-fuelled generation, leading to reliance on these commodities for Australia's energy supply, is becoming an increasingly high-risk energy policy. Domestic buyers of gas already face difficulty arranging supply contracts despite abundant capacity because resources are being allocated to offshore markets.

Port Jackson Partners' presentation, *The Outlook for Retail Electricity Prices*, 27 September 2011, provides estimates of gas fired generation costs for Queensland up to 2020. They show that the current market expectation of the Long Run Marginal Cost of gas generation is higher than the price of offtake agreements that would make wind power projects feasible.

Requests or comments about reducing the RET have come solely from those with vested interests in profiting from fossil-fuelled generation over renewables (eg Origin Energy, who in the last few years has invested heavily in the development of coal-seam gas).

Impact of wind farms

Section 4.6 of the Issues Paper notes that the National Health and Medical Research Council is investigating the impact of wind farms on human health by commissioning a systematic review of the scientific literature to examine the possible impacts of wind farms on human health, including audible and inaudible noise. We would like to point out that the National Health and Medical Research Council concluded in their 2009 study that "there was no published scientific evidence to positively link wind turbines with adverse health effects." (*Wind Farms and Human Health*, Australian Government National Health and Medical Research Council, 3 Sep 2012). This assessment matches assessments by other similar agencies throughout the world.

The scientifically accepted research on wind turbine noise, both audible and inaudible (such as low frequency noise) continues to show there is no established link to health issues. It is also important to note that there is a significant level of misinformation and lies about the impact of wind farms, ranging from health to land values, being spread in the media by a handful of anti-wind farm lobby groups.

Public support for wind energy projects remains high. Various polls conducted by developers of wind farms and by the Clean Energy Council continue to indicate that nearly 80% of people support wind farms, including those living in areas that already have wind projects in their area.

Cost of the RET

Section 7.1 of the Issues Paper points out that cost of the RET is low compared to the total cost of electricity (2.3% in total for the LRET and SRES) and it is expected to reduce significantly considering the reduction in the Small Technology Percentage (STP) for 2013 and 2014 compared to 2011 and 2012.

LRET and SRES costs are quantifiable costs of renewable generation. It would be prudent to compare the cost of the RET to an analysis of the cost of any expected increase in the price of fossil fuels (particularly gas as Australia's gas reserves become exposed to and hence are expected to reach parity with world gas prices), as well as the various external costs of fossil-fuel generation including: loss of long-term productive land to short-term mining; increased climate change due to continued emissions from extraction, processing, transport and burning of fossil fuels; and costs associated with health impacts of fossil fuel emissions (air pollution, respiratory diseases, more severe weather systems including droughts and floods, sea level rise, ocean acidification, extinction of flora and fauna, etc).

Impact on market prices

As per Section 7.2 of the Issues Paper, experience with the merit order effect in Germany and in South Australia have demonstrated that increasing levels of renewables (predominantly wind and solar) in the grid lead to lower electricity prices.

Electricity network security

As noted in Section 7.3 of the Issues Paper, AEMO requires all significant new generation to participate in central dispatch processes to control output and hence ensure network security. Network security seems to be an issue that is raised by opponents of renewables as a reason that renewables should not be supported, however in practice, areas around the world that have increasing levels of renewables in the grid (including South Australia) have achieved this without an adverse impact on network security. It has been demonstrated that the output of intermittent generation such as wind and solar can be reliably predicted in advance, and as more is constructed over a larger area the spread of locations means that any local intermittency is significantly reduced.